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HUMARA, JAIME M.
YAN, HUA
SWORDS, KATHY

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<151> 2003-02-20

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<170> PatentIn Ver. 3.2

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<213> Solanum tuberosum

<400> 5
atgagaaatt tattccccat attgatgcta atcaccaatt tggcactcaa caacgataac 60
aacaacaaca acaacaacaa caataattat aatctcatac acgcaacgtg tagggagacc 120
ccatattact ccctatgtct caccacccta caatccggtc cacgtagtaa cgaggttgag 180
ggtggtgatg ccatcaccac cctaggcctc atcatggtgg acgcggtgaa atcaaagtcc 240
atagaaataa tggaaaaaat aaaagagcta gagaaatcga accctgagtg gcgggcccca 300
cttagccagt gttacgtggc gtataatgcc gtcctacgag ccgatgtaac ggtagccgtt 360
gaagccttaa agaagggtgc ccccaaattt gctgaagatg gtatggatga tgttgttgct 420
gaagcacaaa cttgtgagta tagttttaat tattataata aattggattt tccaatttct 480
aatttgagta gggaaataat tgaactatca aaagttgcta aatccataat tagaatgtta 540
ttatga 546

<210> 6
<211> 658
<212> DNA
<213> Solanum tuberosum

<400> 6
gaaccatgca tctcaatctt aatactaaaa aatgcaacaa aattctagtg gagggaccag 60
taccagtaca ttagatatta tcttttatta ctataataat attttaatta acacgagaca 120
taggaatgtc aagtggtagc ggtaggaggg agttggttca gttttttaga tactaggaga 180
cagaaccgga ggggcccatt gcaaggccca agttgaagtc cagccgtgaa tcaacaaaga 240
gagggcccat aatactgtcg atgagcattt ccctataata cagtgtccac agttgccttc 300
cgctaaggga tagccacccg ctattctctt gacacgtgtc actgaaacct gctacaaata 360
aggcaggcac ctcctcattc tcacactcac tcactcacac agctcaacaa gtggtaactt 420
ttactcatct cctccaatta tttctgattt catgcatgtt tccctacatt ctattatgaa 480
tcgtgttatg gtgtataaac gttgtttcat atctcatctc atctattctg attttgattc 540
tcttgcctac tgaatttgac cctactgtaa tcggtgataa atgtgaatgc ttcctcttct 600
tcttcttctt ctcagaaatc aatttctgtt ttgtttttgt tcatctgtag cttggtag 658

<210> 7
<211> 355
<212> DNA
<213> Solanum tuberosum

<400> 7
ttttaatgtt tagcaaatgt cctatcagtt ttctcttttt gtcgaacggt aatttagagt 60
tttttttgct atatggattt tcgtttttga tgtatgtgac aaccctcggg attgttgatt 120
tatttcaaaa ctaagagttt ttgcttattg ttctcgtcta ttttggatat caatcttagt 180
tttatatctt ttctagttct ctacgtgtta aatgttcaac acactagcaa tttggctgca 240
gcgtatggat tatggaacta tcaagtctgt gggatcgata aatatgcttc tcaggaattt 300
gagattttac agtctttatg ctcattgggt tgagtataat atagtaaaaa aatag 355

<210> 8
<211> 179

<212> DNA
<213> Solanum tuberosum

<400> 8
accttatttc actaccactt tccactctcc aatccccata ctctctgctc caatcttcat 60
tttgcttcgt gaattcatct tcatcgaatt tctcgacgct tcttcgctaa tttcctcgtt 120
acttcactaa aaatcgacgt ttctagctga acttgagtga attaagccag tgggaggat 179

<210> 9
<211> 569
<212> DNA
<213> Solanum tuberosum

<400> 9
gttagaaatc ttctctattt ttggtttttg tctgtttaga ttctcgaatt agctaatcag 60
gtgctgttat agcccttaat tttgagtttt ttttcggttg ttttgatgga aaaggcctaa 120
aatttgagtt tttttacgtt ggtttgatgg aaaaggccta caattggagt tttccccgtt 180
gttttgatga aaaagcccct agtttgagat tttttttctg tcgattcgat tctaaaggtt 240
taaaattaga gtttttacat ttgtttgatg aaaaaggcct taaatttgag tttttccggt 300
tgatttgatg aaaaagccct agaatttgtg ttttttcgtc ggtttgattc tgaaggccta 360
aaatttgagt ttctccggct gttttgatga aaaagcccta aatttgagtt tctccggctg 420
ttttgatgaa aaagccctaa atttgagttt tttccccgtg ttttagattg tttggtttta 480
attctcgaat cagctaatca gggagtgtga aaagccctaa aatttgagtt tttttcgttg 540
ttctgattgt tgtttttatg aatttgcag 569

<210> 10
<211> 1738
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Expression
cassette for a sense and antisense copy of the
leader associated with the R1 gene

<400> 10
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
ccaccttatt tcactaccac tttccactct ccaatcccca tactctctgc tccaatcttc 480
attttgcttc gtgaattcat cttcatcgaa tttctcgacg cttcttcgct aatttcctcg 540
ttacttcact agaaatcgac gttttctagct gaacttgagt gaattaagcc agtgggagga 600
tgaattcaag gttagaaatc ttctctattt ttggtttttg tctgtttaga ttctcgaatt 660
agctaatcag gtgctgttat agcccttaat tttgagtttt ttttcggttg ttttgatgga 720
aaaggcctaa aatttgagtt tttttacgtt ggtttgatgg aaaaggccta caattggagt 780
tttccccgtt gttttgatga aaaagcccct agtttgagat tttttttctg tcgattcgat 840
tctaaaggtt taaaattaga gtttttacat ttgtttgatg aaaaaggcct taaatttgag 900
tttttccggt tgatttgatg aaaaagccct agaatttgtg ttttttcgtc ggtttgattc 960
tgaaggccta aaatttgagt ttctccggct gttttgatga aaaagcccta aatttgagtt 1020
tctccggctg ttttgatgaa aaagccctaa atttgagttt tttccccgtg ttttagattg 1080
tttggtttta attctcgaat cagctaatca gggagtgtga aaagccctaa aatttgagtt 1140

```
tttttcgttg ttctgattgt tgtttttatg aatttgcaga tggatatcat cctcccactg 1200
gcttaattca ctcaagttca gctagaaacg tcgatttcta gtgaagtaac gaggaaatta 1260
gcgaagaagc gtcgagaaat tcgatgaaga tgaattcacg aagcaaaatg aagattggag 1320
cagagagtat ggggattgga gagtggaaag tggtagtgaa ataaggtaag cttttgattt 1380
taatgtttag caaatgtcct atcagttttc tctttttgtc gaacggtaat ttagagtttt 1440
ttttgctata tggattttcg tttttgatgt atgtgacaac cctcgggatt gttgatttat 1500
ttcaaaacta agagtttttg cttattgttc tcgtctattt tggatatcaa tcttagtttt 1560
atatcttttc tagttctcta cgtgttaaat gttcaacaca ctagcaattt ggctgcagcg 1620
tatggattat ggaactatca agtctgtggg atcgataaat atgcttctca ggaatttgag 1680
attttacagt ctttatgctc attgggttga gtataatata gtaaaaaaat agtctaga   1738
```

<210> 11
<211> 237
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
spacer sequence

<400> 11

```
gtaactttta ctcatctcct ccaattattt ctgatttcat gcatgtttcc ctacattcta 60
ttatgaatcg tgttatggtg tataaacgtt gtttcatatc tcatctcatc tattctgatt 120
ttgattctct tgcctactga atttgaccct actgtaatcg gtgataaatg tgaatgcttc 180
ctcttcttct tcttcttctc agaaatcaat ttctgttttg tttttgttca tctgtag    237
```

<210> 12
<211> 1406
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative
expression cassette for a sense and antisense
coopy of the leader associated with the R1 gene

<400> 12

```
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
ccaccttatt tcactaccac tttccactct ccaatcccca tactctctgc tccaatcttc 480
attttgcttc gtgaattcat cttcatcgaa tttctcgacg cttcttcgct aatttcctcg 540
ttacttcact agaaatcgac gtttctagct gaacttgagt gaattaagcc agtgggagga 600
tgaattcgtg gtaactttta ctcatctcct ccaattattt ctgatttcat gcatgtttcc 660
ctacattcta ttatgaatcg tgttatggtg tataaacgtt gtttcatatc tcatctcatc 720
tattctgatt ttgattctct tgcctactga atttgaccct actgtaatcg gtgataaatg 780
tgaatgcttc ctcttcttct tcttcttctc agaaatcaat ttctgttttg tttttgttca 840
tctgtagctt gatatcatcc tcccactggc ttaattcact caagttcagc tagaaacgtc 900
gatttctagt gaagtaacga ggaaattagc gaagaagcgt cgagaaattc gatgaagatg 960
aattcacgaa gcaaaatgaa gattggagca gagagtatgg ggattggaga gtggaaagtg 1020
gtagtgaaat aaggtaagct tttgatttta atgtttagca aatgtcctat cagttttctc 1080
```

```
tttttgtcga acggtaattt agagtttttt ttgctatatg gattttcgtt tttgatgtat 1140
gtgacaaccc tcgggattgt tgatttattt caaaactaag agtttttgct tattgttctc 1200
gtctattttg gatatcaatc ttagttttat atcttttcta gttctctacg tgttaaatgt 1260
tcaacacact agcaatttgg ctgcagcgta tggattatgg aactatcaag tctgtgggat 1320
cgataaatat gcttctcagg aatttgagat tttacagtct ttatgctcat tgggttgagt 1380
ataatatagt aaaaaaatag tctaga                                     1406
```

<210> 13
<211> 686
<212> DNA
<213> Solanum tuberosum

<400> 13

```
gaaccatgca tctcaatctt aatactaaaa aatgcaacaa aattctagtg gagggaccag 60
taccagtaca ttagatatta tcttttatta ctataataat attttaatta acacgagaca 120
taggaatgtc aagtggtagc ggtaggaggg agttggttca gttttttaga tactaggaga 180
cagaaccgga ggggcccatt gcaaggccca agttgaagtc cagccgtgaa tcaacaaaga 240
gagggcccat aatactgtcg atgagcattt ccctataata cagtgtccac agttgccttc 300
cgctaaggga tagccacccg ctattctctt gacacgtgtc actgaaacct gctacaaata 360
aggcaggcac ctcctcattc tcacactcac tcactcacac agctcaacaa gtggtaactt 420
ttactcatct cctccaatta tttctgattt catgcatgtt tccctacatt ctattatgaa 480
tcgtgttatg gtgtataaac gttgtttcat atctcatctc atctattctg attttgattc 540
tcttgcctac tgaatttgac cctactgtaa tcggtgataa atgtgaatgc ttcctcttct 600
tcttcttctt ctcagaaatc aatttctgtt ttgtttttgt tcatctgtag cttggtagat 660
tccccttttt gtagaccaca catcac                                     686
```

<210> 14
<211> 2046
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative expression cassette for a sense and antisense copy of the leader associated with the R1 gene

<400> 14

```
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
cctcatattc tagttgtatg ttgttcagag aagaccacag atgtgatcat attctcattg 480
tatcagatct gtgaccactt acctgatacc tcccatgaag ttacctgtat gattatacgt 540
gatccaaagc catcacatca tgttcacctt cagctattgg aggagaagtg agaagtagga 600
attgcaatat gaggaataat aagaaaaact ttgtaaaagc taaattagct gggtatgata 660
tagggagaaa tgtgtaaaca ttgtactata tatagtatat acacacgcat tatgtattgc 720
attatgcact gaataatacc gcagcatcaa agaaggaatt caaggttaga aatcttctct 780
atttttggtt tttgtctgtt tagattctcg aattagctaa tcaggtgctg ttatagccct 840
taattttgag tttttttttcg gttgttttga tggaaaaggc ctaaaatttg agtttttttta 900
cgttggtttg atggaaaagg cctacaattg gagttttccc cgttgttttg atgaaaaagc 960
ccctagtttg agatttttttt tctgtcgatt cgattctaaa ggtttaaaat tagagttttt 1020
acatttgttt gatgaaaaag gccttaaatt tgagtttttc cggttgattt gatgaaaaag 1080
```

ccctagaatt tgtgtttttt cgtcggtttg attctgaagg cctaaaattt gagtttctcc 1140
ggctgttttg atgaaaaagc cctaaatttg agtttctccg gctgttttga tgaaaaagcc 1200
ctaaatttga gttttttccc cgtgttttag attgtttggt tttaattctc gaatcagcta 1260
atcagggagt gtgaaaagcc ctaaaatttg agtttttttc gttgttctga ttgttgtttt 1320
tatgaatttg cagatggata tccttctttg atgctgcggt attattcagt gcataatgca 1380
atacataatg cgtgtgtata tactatatat agtacaatgt ttacacattt ctccctatat 1440
catacccagc taatttagct tttacaaagt ttttcttatt attcctcata ttgcaattcc 1500
tacttctcac ttctcctcca atagctgaag gtgaacatga tgtgatggct ttggatcacg 1560
tataatcata caggtaactt catgggaggt atcaggtaag tggtcacaga tctgatacaa 1620
tgagaatatg atcacatctg tggtcttctc tgaacaacat acaactagaa tatgaaagct 1680
tttgatttta atgtttagca aatgtcctat cagttttctc tttttgtcga acggtaattt 1740
agagtttttt ttgctatatg gattttcgtt tttgatgtat gtgacaaccc tcgggattgt 1800
tgatttattt caaaactaag agtttttgct tattgttctc gtctattttg gatatcaatc 1860
ttagttttat atcttttcta gttctctacg tgttaaatgt tcaacacact agcaatttgg 1920
ctgcagcgta tggattatgg aactatcaag tctgtgggat cgataaatat gcttctcagg 1980
aatttgagat tttacagtct ttatgctcat tgggttgagt ataatatagt aaaaaaatag 2040
tctaga 2046

<210> 15
<211> 1714
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative expression cassette for a sense and antisense copy of the leader associated with the R1 gene

<400> 15
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
cctcatattc tagttgtatg ttgttcagag aagaccacag atgtgatcat attctcattg 480
tatcagatct gtgaccactt acctgatacc tcccatgaag ttacctgtat gattatacgt 540
gatccaaagc catcacatca tgttcacctt cagctattgg aggagaagtg agaagtagga 600
attgcaatat gaggaataat aagaaaaact ttgtaaaagc taaattagct gggtatgata 660
tagggagaaa tgtgtaaaca ttgtactata tatagtatat acacacgcat tatgtattgc 720
attatgcact gaataatacc gcagcatcaa agaaggaatt cgtggtaact tttactcatc 780
tcctccaatt atttctgatt tcatgcatgt ttccctacat tctattatga atcgtgttat 840
ggtgtataaa cgttgtttca tatctcatct catctattct gattttgatt ctcttgccta 900
ctgaatttga ccctactgta atcggtgata aatgtgaatg cttcctcttc ttcttcttct 960
tctcagaaat caatttctgt tttgtttttg ttcatctgta gcttgatatc cttctttgat 1020
gctgcggtat tattcagtgc ataatgcaat acataatgcg tgtgtatata ctatatatag 1080
tacaatgttt acacatttct ccctatatca tacccagcta atttagcttt tacaaagttt 1140
ttcttattat tcctcatatt gcaattccta cttctcactt ctcctccaat agctgaaggt 1200
gaacatgatg tgatggcttt ggatcacgta taatcataca ggtaacttca tgggaggtat 1260
caggtaagtg gtcacagatc tgatacaatg agaatatgat cacatctgtg gtcttctctg 1320
aacaacatac aactagaata tgaaagcttt tgattttaat gtttagcaaa tgtcctatca 1380
gttttctctt tttgtcgaac ggtaatttag agtttttttt gctatatgga ttttcgtttt 1440
tgatgtatgt gacaaccctc gggattgttg atttatttca aaactaagag tttttgctta 1500
ttgttctcgt ctattttgga tatcaatctt agttttatat cttttctagt tctctacgtg 1560
ttaaatgttc aacacactag caatttggct gcagcgtatg gattatggaa ctatcaagtc 1620

tgtgggatcg ataaatatgc ttctcaggaa tttgagattt tacagtcttt atgctcattg 1680
ggttgagtat aatatagtaa aaaaatagtc taga 1714

<210> 16
<211> 333
<212> DNA
<213> Solanum tuberosum

<400> 16
tcatattcta gttgtatgtt gttcagagaa gaccacagat gtgatcatat tctcattgta 60
tcagatctgt gaccacttac ctgatacctc ccatgaagtt acctgtatga ttatacgtga 120
tccaaagcca tcacatcatg ttcaccttca gctattggag gagaagtgag aagtaggaat 180
tgcaatatga ggaataataa gaaaaacttt gtaaaagcta aattagctgg gtatgatata 240
gggagaaatg tgtaaacatt gtactatata tagtatatac acacgcatta tgtattgcat 300
tatgcactga ataataccgc agcatcaaag aag 333

<210> 17
<211> 2046
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative
expression cassette for a sense and antisense copy
of the trailer associated with the R1 gene

<400> 17
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
cctcatattc tagttgtatg ttgttcagag aagaccacag atgtgatcat attctcattg 480
tatcagatct gtgaccactt acctgatacc tcccatgaag ttacctgtat gattatacgt 540
gatccaaagc catcacatca tgttcacctt cagctattgg aggagaagtg agaagtagga 600
attgcaatat gaggaataat aagaaaaact ttgtaaaagc taaattagct gggtatgata 660
tagggagaaa tgtgtaaaca ttgtactata tatagtatat acacacgcat tatgtattgc 720
attatgcact gaataatacc gcagcatcaa agaaggaatt caaggttaga aatcttctct 780
atttttggtt tttgtctgtt tagattctcg aattagctaa tcaggtgctg ttatagccct 840
taattttgag ttttttttcg gttgttttga tggaaaaggc ctaaaatttg agtttttta 900
cgttggtttg atggaaaagg cctacaattg gagttttccc cgttgttttg atgaaaaagc 960
ccctagtttg agatttttt tctgtcgatt cgattctaaa ggtttaaaat tagagttttt 1020
acatttgttt gatgaaaaag gccttaaatt tgagtttttc cggttgattt gatgaaaaag 1080
ccctagaatt tgtgtttttt cgtcggtttg attctgaagg cctaaaattt gagtttctcc 1140
ggctgttttg atgaaaaagc cctaaatttg agtttctccg gctgttttga tgaaaaagcc 1200
ctaaatttga gtttttccc cgtgttttag attgtttggt tttaattctc gaatcagcta 1260
atcagggagt gtgaaaagcc ctaaaatttg agtttttttc gttgttctga ttgttgtttt 1320
tatgaatttg cagatggata tccttctttg atgctgcggt attattcagt gcataatgca 1380
atacataatg cgtgtgtata tactatatat agtacaatgt ttacacattt ctccctatat 1440
catacccagc taatttagct tttacaaagt ttttcttatt attcctcata ttgcaattcc 1500
tacttctcac ttctcctcca atagctgaag gtgaacatga tgtgatggct ttggatcacg 1560
tataatcata caggtaactt catgggaggt atcaggtaag tggtcacaga tctgatacaa 1620
tgagaatatg atcacatctg tggtcttctc tgaacaacat acaactagaa tatgaaagct 1680

tttgatttta atgtttagca aatgtcctat cagttttctc tttttgtcga acggtaattt 1740
agagtttttt ttgctatatg gattttcgtt tttgatgtat gtgacaaccc tcgggattgt 1800
tgatttattt caaaactaag agtttttgct tattgttctc gtctattttg gatatcaatc 1860
ttagttttat atcttttcta gttctctacg tgttaaatgt tcaacacact agcaatttgg 1920
ctgcagcgta tggattatgg aactatcaag tctgtgggat cgataaatat gcttctcagg 1980
aatttgagat tttacagtct ttatgctcat tgggttgagt ataatatagt aaaaaaatag 2040
tctaga 2046

<210> 18
<211> 1714
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative
expression cassette for a sense and antisense copy
of the trailer associated with the R1 gene

<400> 18
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
cctcatattc tagttgtatg ttgttcagag aagaccacag atgtgatcat attctcattg 480
tatcagatct gtgaccactt acctgatacc tcccatgaag ttacctgtat gattatacgt 540
gatccaaagc catcacatca tgttcacctt cagctattgg aggagaagtg agaagtagga 600
attgcaatat gaggaataat aagaaaaact ttgtaaaagc taaattagct gggtatgata 660
tagggagaaa tgtgtaaaca ttgtactata tatagtatat acacacgcat tatgtattgc 720
attatgcact gaataatacc gcagcatcaa agaaggaatt cgtggtaact tttactcatc 780
tcctccaatt atttctgatt tcatgcatgt ttccctacat tctattatga atcgtgttat 840
ggtgtataaa cgttgtttca tatctcatct catctattct gattttgatt ctcttgccta 900
ctgaatttga ccctactgta atcggtgata aatgtgaatg cttcctcttc ttcttcttct 960
tctcagaaat caatttctgt tttgtttttg ttcatctgta gcttgatatc cttctttgat 1020
gctgcggtat tattcagtgc ataatgcaat acataatgcg tgtgtatata ctatatatag 1080
tacaatgttt acacatttct ccctatatca tacccagcta atttagcttt tacaaagttt 1140
ttcttattat tcctcatatt gcaattccta cttctcactt ctcctccaat agctgaaggt 1200
gaacatgatg tgatggcttt ggatcacgta taatcataca ggtaacttca tgggaggtat 1260
caggtaagtg gtcacagatc tgatacaatg agaatatgat cacatctgtg gtcttctctg 1320
aacaacatac aactagaata tgaaagcttt tgattttaat gtttagcaaa tgtcctatca 1380
gttttctctt tttgtcgaac ggtaatttag agtttttttt gctatatgga ttttcgtttt 1440
tgatgtatgt gacaaccctc gggattgttg atttatttca aaactaagag tttttgctta 1500
ttgttctcgt ctattttgga tatcaatctt agttttatat cttttctagt tctctacgtg 1560
ttaaatgttc aacacactag caatttggct gcagcgtatg gattatggaa ctatcaagtc 1620
tgtgggatcg ataaatatgc ttctcaggaa tttgagattt tacagtcttt atgctcattg 1680
ggttgagtat aatatagtaa aaaaatagtc taga 1714

<210> 19
<211> 2322
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative
expression cassette for a sense and antisense copy
of the trailer associated with the R1 gene

<400> 19
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caacaagtgg 420
taacttttac tcatctcctc caattatttc tgatttcatg catgtttccc tacattctat 480
tatgaatcgt gttatggtgt ataaacgttg tttcatatct catctcatct attctgattt 540
tgattctctt gcctactgaa tttgacccta ctgtaatcgg tgataaatgt gaatgcttcc 600
tcttcttctt cttcttctca gaaatcaatt tctgttttgt ttttgttcat ctgtagcttg 660
gtagattccc ctttttgtag accacacatc acggatcctc atattctagt tgtatgttgt 720
tcagagaaga ccacagatgt gatcatattc tcattgtatc agatctgtga ccacttacct 780
gatacctccc atgaagttac ctgtatgatt atacgtgatc caaagccatc acatcatgtt 840
caccttcagc tattggagga gaagtgagaa gtaggaattg caatatgagg aataataaga 900
aaaactttgt aaaagctaaa ttagctgggt atgatatagg gagaaatgtg taaacattgt 960
actatatata gtatatacac acgcattatg tattgcatta tgcactgaat aataccgcag 1020
catcaaagaa ggaattcaag gttagaaatc ttctctattt ttggtttttg tctgtttaga 1080
ttctcgaatt agctaatcag gtgctgttat agcccttaat tttgagtttt ttttcggttg 1140
ttttgatgga aaaggcctaa aatttgagtt tttttacgtt ggtttgatgg aaaaggccta 1200
caattggagt tttccccgtt gttttgatga aaaagcccct agtttgagat tttttttctg 1260
tcgattcgat tctaaaggtt taaaattaga gtttttacat ttgtttgatg aaaaaggcct 1320
taaatttgag tttttccggt tgatttgatg aaaaagcccc agaatttgtg ttttttcgtc 1380
ggtttgattc tgaaggccta aaatttgagt ttctccggct gttttgatga aaaagcccta 1440
aatttgagtt tctccggctg ttttgatgaa aaagccctaa atttgagttt tttccccgtg 1500
ttttagattg tttggtttta attctcgaat cagctaatca gggagtgtga aaagccctaa 1560
aatttgagtt tttttcgttg ttctgattgt tgtttttatg aatttgcaga tggatatcct 1620
tctttgatgc tgcggtatta ttcagtgcat aatgcaatac ataatgcgtg tgtatatact 1680
atatatagta caatgtttac acatttctcc ctatatcata cccagctaat ttagctttta 1740
caaagttttt cttattattc ctcatattgc aattcctact tctcacttct cctccaatag 1800
ctgaaggtga acatgatgtg atggctttgg atcacgtata atcatacagg taacttcatg 1860
ggaggtatca ggtaagtggt cacagatctg atacaatgag aatatgatca catctgtggt 1920
cttctctgaa caacatacaa ctagaatatg aaagcttttg attttaatgt ttagcaaatg 1980
tcctatcagt tttctctttt tgtcgaacgg taatttagag tttttttttgc tatatggatt 2040
ttcgtttttg atgtatgtga caaccctcgg gattgttgat ttatttcaaa actaagagtt 2100
tttgcttatt gttctcgtct attttggata tcaatcttag ttttatatct tttctagttc 2160
tctacgtgtt aaatgttcaa cacactagca atttggctgc agcgtatgga ttatggaact 2220
atcaagtctg tgggatcgat aaatatgctt ctcaggaatt tgagatttta cagtctttat 2280
gctcattggg ttgagtataa tatagtaaaa aaatagtcta ga 2322

<210> 20
<211> 1714
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative
expression cassette for a sense and antisense copy
of the trailer associated with the R1 gene

<400> 20
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaàtcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
cctcatattc tagttgtatg ttgttcagag aagaccacag atgtgatcat attctcattg 480
tatcagatct gtgaccactt acctgatacc tcccatgaag ttacctgtat gattatacgt 540
gatccaaagc catcacatca tgttcacctt cagctattgg aggagaagtg agaagtagga 600
attgcaatat gaggaataat aagaaaaact ttgtaaaagc taaattagct gggtatgata 660
tagggagaaa tgtgtaaaca ttgtactata tatagtatat acacacgcat tatgtattgc 720
attatgcact gaataatacc gcagcatcaa agaaggaatt cgtggtaact tttactcatc 780
tcctccaatt atttctgatt tcatgcatgt ttccctacat tctattatga atcgtgttat 840
ggtgtataaa cgttgtttca tatctcatct catctattct gattttgatt ctcttgccta 900
ctgaatttga ccctactgta atcggtgata aatgtgaatg cttcctcttc ttcttcttct 960
tctcagaaat caatttctgt tttgtttttg ttcatctgta gcttgatatc cttctttgat 1020
gctgcggtat tattcagtgc ataatgcaat acataatgcg tgtgtatata ctatatatag 1080
tacaatgttt acacatttct ccctatatca tacccagcta atttagcttt tacaaagttt 1140
ttcttattat tcctcatatt gcaattccta cttctcactt ctcctccaat agctgaaggt 1200
gaacatgatg tgatggcttt ggatcacgta taatcataca ggtaacttca tgggaggtat 1260
caggtaagtg gtcacagatc tgatacaatg agaatatgat cacatctgtg gtcttctctg 1320
aacaacatac aactagaata tgaaagcttt tgattttaat gtttagcaaa tgtcctatca 1380
gttttctctt tttgtcgaac ggtaatttag agtttttttt gctatatgga ttttcgtttt 1440
tgatgtatgt gacaaccctc gggattgttg atttatttca aaactaagag tttttgctta 1500
ttgttctcgt ctattttgga tatcaatctt agttttatat cttttctagt tctctacgtg 1560
ttaaatgttc aacacactag caatttggct gcagcgtatg gattatggaa ctatcaagtc 1620
tgtgggatcg ataaatatgc ttctcaggaa tttgagattt tacagtcttt atgctcattg 1680
ggttgagtat aatatagtaa aaaaatagtc taga 1714

<210> 21
<211> 273
<212> DNA
<213> Solanum tuberosum

<400> 21
ttagagtgtg ggtaagtaat taagttaggg atttgtggga aatggacaaa tataagagag 60
tgcaggggag tagtgcagga gattttcgtg cttttattga taaataaaaa aagggtgaca 120
tttaatttcc acaagaggac gcaacacaac acacttaatt cctgtgtgtg aatcaataat 180
tgacttctcc aatcttcatc aataaaataa ttcacaatcc tcactctctt atcactctca 240
ttcgaaaagc tagatttgca tagagagcac aaa 273

<210> 22
<211> 158
<212> DNA
<213> Solanum tuberosum

<400> 22
gaggggaag tgaatgaaaa ataacaaagg cacagtaagt agtttctctt tttatcatgt 60
gatgaaggta tataatgtat gtgtaagagg atgatgttat taccacataa taagagatga 120
agagtctcat tttctgctta aaaaaacaat tcactggc 158

<210> 23
<211> 1917
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Expression cassette for a sense and antisense copy of the leader associated with the L glucan phosphorylase gene

<400> 23
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
ccgagtgtgg gtaagtaatt aagttaggga tttgtgggaa atggacaaat ataagagagt 480
gcaggggagt agtgcaggag attttcgtgc ttttattgat aaataaaaaa agggtgacat 540
ttaatttcca caagaggacg caacacaaca cacttaattc ctgtgtgtga atcaataatt 600
gacttctcca atcttcatca ataaaataat tcacaatcct cactctctta tcactctcat 660
tcgaaaagct agatttgcat agagagcaca gaattcaagg ttagaaatct tctctatttt 720
tggtttttgt ctgtttagat tctcgaatta gctaatcagg tgctgttata gcccttaatt 780
ttgagttttt tttcggttgt tttgatggaa aaggcctaaa atttgagttt ttttacgttg 840
gtttgatgga aaaggcctac aattggagtt ttccccgttg ttttgatgaa aaagccccta 900
gtttgagatt ttttttctgt cgattcgatt ctaaaggttt aaaattagag tttttacatt 960
tgtttgatga aaaaggcctt aaatttgagt ttttccggtt gatttgatga aaaagcccta 1020
gaatttgtgt tttttcgtcg gtttgattct gaaggcctaa aatttgagtt tctccggctg 1080
ttttgatgaa aaagccctaa atttgagttt ctccggctgt tttgatgaaa aagccctaaa 1140
tttgagtttt ttccccgtgt tttagattgt ttggttttaa ttctcgaatc agctaatcag 1200
ggagtgtgaa aagccctaaa atttgagttt ttttcgttgt tctgattgtt gtttttatga 1260
atttgcagat ggatatctgt gctctctatg caaatctagc ttttcgaatg agagtgataa 1320
gagagtgagg attgtgaatt attttattga tgaagattgg agaagtcaat tattgattca 1380
cacacaggaa ttaagtgtgt tgtgttgcgt cctcttgtgg aaattaaatg tcacccttt 1440
tttatttatc aataaaagca cgaaaatctc ctgcactact cccctgcact ctcttatatt 1500
tgtccatttc ccacaaatcc ctaacttaat tacttaccca cactctaagc ttttgatttt 1560
aatgtttagc aaatgtccta tcagttttct ctttttgtcg aacggtaatt tagagttttt 1620
tttgctatat ggattttcgt ttttgatgta tgtgacaacc ctcgggattg ttgatttatt 1680
tcaaaactaa gagtttttgc ttattgttct cgtctatttt ggatatcaat cttagtttta 1740
tatcttttct agttctctac gtgttaaatg ttcaacacac tagcaatttg gctgcagcgt 1800
atggattatg gaactatcaa gtctgtggga tcgataaata tgcttctcag gaatttgaga 1860
ttttacagtc tttatgctca ttgggttgag tataatatag taaaaaaata gtctaga 1917

<210> 24
<211> 1585
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative expression cassette for a sense and antisense copy of the leader associated with the L glucan phosphorylase gene

<400> 24
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60

gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
ccgagtgtgg gtaagtaatt aagttaggga tttgtgggaa atggacaaat ataagagagt 480
gcaggggagt agtgcaggag attttcgtgc ttttattgat aaataaaaaa agggtgacat 540
ttaatttcca caagaggacg caacacaaca cacttaattc ctgtgtgtga atcaataatt 600
gacttctcca atcttcatca ataaaataat tcacaatcct cactctctta tcactctcat 660
tcgaaaagct agatttgcat agagagcaca gaattcgtgg taacttttac tcatctcctc 720
caattatttc tgatttcatg catgtttccc tacattctat tatgaatcgt gttatggtgt 780
ataaacgttg tttcatatct catctcatct attctgattt tgattctctt gcctactgaa 840
tttgacccta ctgtaatcgg tgataaatgt gaatgcttcc tcttcttctt cttcttctca 900
gaaatcaatt tctgttttgt ttttgttcat ctgtagcttg atatctgtgc tctctatgca 960
aatctagctt ttcgaatgag agtgataaga gagtgaggat tgtgaattat tttattgatg 1020
aagattggag aagtcaatta ttgattcaca cacaggaatt aagtgtgttg tgttgcgtcc 1080
tcttgtggaa attaaatgtc acccttttt tatttatcaa taaaagcacg aaaatctcct 1140
gcactactcc cctgcactct cttatatttg tccatttccc acaaatccct aacttaatta 1200
cttacccaca ctctaagctt ttgattttaa tgtttagcaa atgtcctatc agttttctct 1260
ttttgtcgaa cggtaattta gagtttttt tgctatatgg attttcgttt ttgatgtatg 1320
tgacaaccct cgggattgtt gatttatttc aaaactaaga gtttttgctt attgttctcg 1380
tctattttgg atatcaatct tagttttata tcttttctag ttctctacgt gttaaatgtt 1440
caacacacta gcaatttggc tgcagcgtat ggattatgga actatcaagt ctgtgggatc 1500
gataaatatg cttctcagga atttgagatt ttacagtctt tatgctcatt gggttgagta 1560
taatatagta aaaaaatagt ctaga 1585

<210> 25
<211> 2193
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative expression cassette for a sense and antisense copy of the leader associated with the L glucan phosphorylase gene

<400> 25
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caacaagtgg 420
taacttttac tcatctcctc caattatttc tgatttcatg catgtttccc tacattctat 480
tatgaatcgt gttatggtgt ataaacgttg tttcatatct catctcatct attctgattt 540
tgattctctt gcctactgaa tttgacccta ctgtaatcgg tgataaatgt gaatgcttcc 600
tcttcttctt cttcttctca gaaatcaatt tctgttttgt ttttgttcat ctgtagcttg 660
gtagattccc ctttttgtag accacacatc acggatccga gtgtgggtaa gtaattaagt 720
tagggatttg tgggaaatgg acaaatataa gagagtgcag gggagtagtg caggagattt 780
tcgtgctttt attgataaat aaaaaaaggg tgacatttaa tttccacaag aggacgcaac 840
acaacacact taattcctgt gtgtgaatca ataattgact tctccaatct tcatcaataa 900
aataattcac aatcctcact ctcttatcac tctcattcga aaagctagat ttgcatagag 960
agcacagaat tcaaggttag aaatcttctc tatttttggt ttttgtctgt ttagattctc 1020
gaattagcta atcaggtgct gttatagccc ttaattttga gttttttttc ggttgttttg 1080

atggaaaagg cctaaaattt gagtttttt acgttggttt gatggaaaag gcctacaatt 1140
ggagttttcc ccgttgtttt gatgaaaaag cccctagttt gagatttttt ttctgtcgat 1200
tcgattctaa aggtttaaaa ttagagtttt tacatttgtt tgatgaaaaa ggccttaaat 1260
ttgagttttt ccggttgatt tgatgaaaaa gccctagaat ttgtgttttt tcgtcggttt 1320
gattctgaag gcctaaaatt tgagtttctc cggctgtttt gatgaaaaag ccctaaattt 1380
gagtttctcc ggctgttttg atgaaaaagc cctaaatttg agttttttcc ccgtgtttta 1440
gattgtttgg ttttaattct cgaatcagct aatcagggag tgtgaaaagc cctaaaattt 1500
gagtttttt cgttgttctg attgttgttt ttatgaattt gcagatggat atctgtgctc 1560
tctatgcaaa tctagctttt cgaatgagag tgataagaga gtgaggattg tgaattattt 1620
tattgatgaa gattggagaa gtcaattatt gattcacaca caggaattaa gtgtgttgtg 1680
ttgcgtcctc ttgtggaaat taaatgtcac ccttttttta tttatcaata aaagcacgaa 1740
aatctcctgc actactcccc tgcactctct tatatttgtc catttcccac aaatccctaa 1800
cttaattact tacccacact ctaagctttt gattttaatg tttagcaaat gtcctatcag 1860
ttttctcttt ttgtcgaacg gtaatttaga gtttttttg ctatatggat tttcgttttt 1920
gatgtatgtg acaaccctcg ggattgttga tttatttcaa aactaagagt ttttgcttat 1980
tgttctcgtc tattttggat atcaatctta gttttatatc ttttctagtt ctctacgtgt 2040
taaatgttca acacactagc aatttggctg cagcgtatgg attatggaac tatcaagtct 2100
gtgggatcga taaatatgct tctcaggaat ttgagatttt acagtcttta tgctcattgg 2160
gttgagtata atatagtaaa aaaatagtct aga 2193

<210> 26
<211> 1861
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Alternative expression cassette for a sense and antisense copy of the leader associated with the L glucan phosphorylase gene

<400> 26
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caacaagtgg 420
taacttttac tcatctcctc caattatttc tgatttcatg catgtttccc tacattctat 480
tatgaatcgt gttatggtgt ataaacgttg tttcatatct catctcatct attctgattt 540
tgattctctt gcctactgaa tttgacccta ctgtaatcgg tgataaatgt gaatgcttcc 600
tcttcttctt cttcttctca gaaatcaatt tctgttttgt ttttgttcat ctgtagcttg 660
gtagattccc ctttttgtag accacacatc acggatccga gtgtgggtaa gtaattaagt 720
tagggatttg tgggaaatgg acaaatataa gagagtgcag gggagtagtg caggagattt 780
tcgtgctttt attgataaat aaaaaaaggg tgacatttaa tttccacaag aggacgcaac 840
acaacacact taattcctgt gtgtgaatca ataattgact tctccaatct tcatcaataa 900
aataattcac aatcctcact ctcttatcac tctcattcga aaagctagat ttgcatagag 960
agcacagaat tcgtggtaac ttttactcat ctcctccaat tatttctgat ttcatgcatg 1020
tttccctaca ttctattatg aatcgtgtta tggtgtataa acgttgtttc atatctcatc 1080
tcatctattc tgattttgat tctcttgcct actgaatttg accctactgt aatcggtgat 1140
aaatgtgaat gcttcctctt cttcttcttc ttctcagaaa tcaatttctg ttttgttttt 1200
gttcatctgt agcttgatat ctgtgctctc tatgcaaatc tagcttttcg aatgagagtg 1260
ataagagagt gaggattgtg aattatttta ttgatgaaga ttggagaagt caattattga 1320
ttcacacaca ggaattaagt gtgttgtgtt gcgtcctctt gtggaaatta aatgtcaccc 1380
ttttttttatt tatcaataaa agcacgaaaa tctcctgcac tactcccctg cactctctta 1440
tatttgtcca tttcccacaa atccctaact taattactta cccacactct aagcttttga 1500

ttttaatgtt tagcaaatgt cctatcagtt ttctcttttt gtcgaacggt aatttagagt 1560
ttttttgct atatggattt tcgtttttga tgtatgtgac aaccctcggg attgttgatt 1620
tatttcaaaa ctaagagttt ttgcttattg ttctcgtcta ttttggatat caatcttagt 1680
tttatatctt ttctagttct ctacgtgtta aatgttcaac acactagcaa tttggctgca 1740
gcgtatggat tatggaacta tcaagtctgt gggatcgata aatatgcttc tcaggaattt 1800
gagattttac agtctttatg ctcattgggt tgagtataat atagtaaaaa aatagtctag 1860
a 1861

<210> 27
<211> 1788
<212> DNA
<213> Solanum tuberosum

<400> 27
atggcaagct tgtgcaatag tagtagtaca tctctcaaaa ctccttttac ttcttcctcc 60
acttctttat cttccactcc taagccctct caacttttca tccatggaaa acgtaaccaa 120
atgttcaaag tttcatgcaa ggttatcaat aataacggtg accaaaacgt tgaaacgaat 180
tctgttgatc gaagaaatgt tcttcttggc ttaggtggtc tttatggtgt tgctaatgct 240
ataccattag ctgcatccgc tgctccaact ccacctcctg atctctcgtc ttgtagtata 300
gccaggatta acgaaaatca ggtggtgccg tacagttgtt gcgcgcctaa gcctgatgat 360
atggagaaag ttccgtatta caagttccct tctatgacta agctccgtgt ccgtcagcct 420
gctcatgaag ctaatgagga gtatattgcc aagtacaatc tggcgattag tcgaatgaga 480
gatcttgata agacacaacc tttaaaccct attggtttta agcaacaagc taatatacat 540
tgtgcttatt gtaatggtgc ttatagaatt ggtggcaaag agttacaagt tcataattct 600
tggcttttct tcccgttcca tagatggtac ttgtacttcc acgagagaat cgtgggaaaa 660
ttcattgatg atccaacttt cgctttgcca tattggaatt gggaccatcc aaagggtatg 720
cgttttcctg ccatgtatga tcgtgaaggg acttcccttt tcgatgtaac acgtgaccaa 780
agtcaccgaa atggagcagt aatcgatctt ggtttttcg gcaatgaagt cgaaacaact 840
caactccagt tgatgagcaa taatttaaca ctaatgtacc gtcaaatggt aactaatgct 900
ccatgtcctc ggatgttctt tggtgggcct tatgatctcg ggattaacac tgaactcccg 960
ggaactatag aaaacattcc tcacggtcct gtccacatct ggtctggtac agtgagaggt 1020
tcaactttgc ccaatggtgc aatatcaaac ggtgagaata tgggtcattt ttactcagct 1080
gctttggacc cggttttctt ttgccatcac agcaatgtgg atcggatgtg gagcgaatgg 1140
aaagcgacag gagggaaaag aacagatatc acacataaag gttggttgaa ctccgagttc 1200
tttttctatg atgaaaatga aaacccttac cgtgtgaaag tccgagactg tttggacacg 1260
aagaagatgg ggtatgatta tgcaccaatg gccaccccgt ggcgtaactt caagccaata 1320
acaaaaacta cagctgggaa agtgaataca gcttctcttc cgccagctag caatgtattc 1380
ccagtggcta aactcgacaa agcaatttcg ttttccatca ataggccgac ttcgtcaagg 1440
actcaacaag agaaaaatgc acaagaggag atgttgacat tcagtagcat aagatatgat 1500
aacagagggt acataaggtt cgatgtgttc ctgaacgtgg acaataatgt gaatgcgaat 1560
gagcttgaca aggcggagtt tgcggggagt tatactagtt tgccacatgt tcatagagct 1620
ggtgagacta atcatatcgc gactgttgat ttccagctgg cgataacgga actgttggag 1680
gatattggtt tggaagatga agatactatt gcggtgactc tggtgccaaa gagaggtggt 1740
gaaggtatct ccattgaaag tgcgacgatc agtcttgcag attgttaa 1788

<210> 28
<211> 1788
<212> DNA
<213> Solanum tuberosum

<400> 28
atggcaagct tgtgcaatag tagtagtaca tctctcaaaa ctccttttac ttcttcctcc 60
acttctttat cttccactcc taagccctct caacttttca tccatggaaa acgtaaccaa 120
atgttcaaag tttcatgcaa ggttatcaat aataacggtg accaaaacgt tgaaacgaat 180
tctgttgatc gaagaaatgt tcttcttggc ttaggtggtc tttatggtgt tgctaatgct 240

ataccattag ctgcatccgc tgctccaact ccacctcctg atctctcgtc ttgtagtata 300
gccaggatta acgaaaatca ggtggtgccg tacagttgtt gcgcgcctaa gcctgatgat 360
atggagaaag ttccgtatta caagttccct tctatgacta agctccgtgt ccgtcagcct 420
gctcatgaag ctaatgagga gtatattgcc aagtacaatc tggcgattag tcgaatgaga 480
gatcttgata agacacaacc tttaaaccct attggtttta agcaacaagc taatatacag 540
tgggcttatg gtaatggtgc ttatagaatt ggtggcaaag agttacaagt tcataattct 600
tggcttttct tcccgttcca tagatggtac ttgtacttcc acgagagaat cgtgggaaaa 660
ttcattgatg atccaacttt cgctttgcca tattggaatt gggaccatcc aaagggtatg 720
cgttttcctg ccatgtatga tcgtgaaggg acttcccttt tcgatgtaac acgtgaccaa 780
agtcaccgaa atggagcagt aatcgatctt ggtttttcg gcaatgaagt cgaaacaact 840
caactccagt tgatgagcaa taatttaaca ctaatgtacc gtcaaatggt aactaatgct 900
ccatgtcctc ggatgttctt tggtgggcct tatgatctcg ggattaacac tgaactcccg 960
ggaactatag gaaacattcc tctcggtcct gtccacatct ggtctggtac agtgagaggt 1020
tcaactttgc ccaatggtgc aatatcaaac ggtgagaata tgggtcattt ttactcagct 1080
gctttggacc cggttttctt ttgccatcac agcaatgtgg atcggatgtg gagcgaatgg 1140
aaagcgacag gagggaaaag aacagatatc acacataaag gttggttgaa ctccgagttc 1200
tttttctatg atgaaaatga aaacccttac cgtgtgaaag tccgagactg tttggacacg 1260
aagaagatgg ggtatgatta tgcaccaatg gccaccccgt ggcgtaactt caagccaata 1320
acaaaaacta cagctgggaa agtgaataca gcttctcttc cgccagctag caatgtattc 1380
ccagtggcta aactcgacaa agcaatttcg ttttccatca ataggccgac ttcgtcaagg 1440
actcaacaag agaaaaatgc acaagaggag atgttgacat tcagtagcat aagatatgat 1500
aacagagggt acataaggtt cgatgtgttc ctgaacgtgg acaataatgt gaatgcgaat 1560
gagcttgaca aggcggagtt tgcggggagt tatactagtt tgccacatgt tcatagagct 1620
ggtgagacta atcatatcgc gactgttgat ttccagctgg cgataacgga actgttggag 1680
gatattggtt tggaagatga agatactatt gcggtgactc tggtgccaaa gagaggtggt 1740
gaaggtatct ccattgaaag tgcgacgatc agtcttgcag attgttaa 1788

<210> 29
<211> 154
<212> DNA
<213> Solanum tuberosum

<400> 29
ttagtctcta ttgaatctgc tgagattaca ctttgatgga tgatgctctg tttttgtttt 60
cttgttctgt tttttcctct gttgaaatca gctttgttgc ttgatttcat tgaagttgtt 120
attcaagaat aaatcagtta caattatgtt tggg 154

<210> 30
<211> 1691
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Expression
cassette for a sense and antisense copy of the trailer
associated with a PPO gene

<400> 30
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420

ccttagtctc tattgaatct gctgagatta cactttgatg gatgatgctc tgtttttgtt 480
ttcttgttct gttttttcct ctgttgaaat cagctttgtt gcttgatttc attgaagttg 540
ttattcaaga ataaatcagt tacaattatg gaattcaagg ttagaaatct tctctatttt 600
tggtttttgt ctgtttagat tctcgaatta gctaatcagg tgctgttata gcccttaatt 660
ttgagttttt tttcggttgt tttgatggaa aaggcctaaa atttgagttt ttttacgttg 720
gtttgatgga aaaggcctac aattggagtt ttccccgttg ttttgatgaa aaagccccta 780
gtttgagatt ttttttctgt cgattcgatt ctaaaggttt aaaattagag tttttacatt 840
tgtttgatga aaaaggcctt aaatttgagt ttttccggtt gatttgatga aaaagcccta 900
gaatttgtgt tttttcgtcg gtttgattct gaaggcctaa aatttgagtt tctccggctg 960
ttttgatgaa aaagccctaa atttgagttt ctccggctgt tttgatgaaa aagccctaaa 1020
tttgagtttt ttccccgtgt tttagattgt ttggttttaa ttctcgaatc agctaatcag 1080
ggagtgtgaa aagccctaaa atttgagttt ttttcgttgt tctgattgtt gtttttatga 1140
atttgcagat ggatatcctt ctttgatgct gatccataat tgtaactgat ttattcttga 1200
ataacaactt caatgaaatc aagcaacaaa gctgatttca acagaggaaa aaacagaaca 1260
agaaaacaaa aacagagcat catccatcaa agtgtaatct cagcagattc aatagagact 1320
aagcttttga ttttaatgtt tagcaaatgt cctatcagtt ttctcttttt gtcgaacggt 1380
aatttagagt tttttttgct atatggattt tcgtttttga tgtatgtgac aaccctcggg 1440
attgttgatt tatttcaaaa ctaagagttt ttgcttattg ttctcgtcta ttttggatat 1500
caatcttagt tttatatctt ttctagttct ctacgtgtta aatgttcaac acactagcaa 1560
tttggctgca gcgtatggat tatggaacta tcaagtctgt gggatcgata aatatgcttc 1620
tcaggaattt gagattttac agtctttatg ctcattgggt tgagtataat atagtaaaaa 1680
aatagtctag a 1691

<210> 31
<211> 1359
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Expression
cassette for a sense and antisense copy of the trailer
associated with a PPO gene

<400> 31
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caagaaggat 420
ccttagtctc tattgaatct gctgagatta cactttgatg gatgatgctc tgtttttgtt 480
ttcttgttct gttttttcct ctgttgaaat cagctttgtt gcttgatttc attgaagttg 540
ttattcaaga ataaatcagt tacaattatg gaattcgtgg taacttttac tcatctcctc 600
caattatttc tgatttcatg catgtttccc tacattctat tatgaatcgt gttatggtgt 660
ataaacgttg tttcatatct catctcatct attctgattt tgattctctt gcctactgaa 720
tttgacccta ctgtaatcgg tgataaatgt gaatgcttcc tcttcttctt cttcttctca 780
gaaatcaatt tctgttttgt ttttgttcat ctgtagcttg atatccttct ttgatgctga 840
tccataattg taactgattt attcttgaat aacaacttca atgaaatcaà gcaacaaagc 900
tgatttcaac agaggaaaaa acagaacaag aaaacaaaaa cagagcatca tccatcaaag 960
tgtaatctca gcagattcaa tagagactaa gcttttgatt ttaatgttta gcaaatgtcc 1020
tatcagtttt ctctttttgt cgaacggtaa tttagagttt tttttgctat atggattttc 1080
gtttttgatg tatgtgacaa ccctcgggat tgttgattta tttcaaaact aagagttttt 1140
gcttattgtt ctcgtctatt ttggatatca atcttagttt tatatctttt ctagttctct 1200
acgtgttaaa tgttcaacac actagcaatt tggctgcagc gtatggatta tggaactatc 1260
aagtctgtgg gatcgataaa tatgcttctc aggaatttga gattttacag tctttatgct 1320

cattgggttg agtataatat agtaaaaaaa tagtctaga 1359

<210> 32
<211> 1967
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Expression cassette for a sense and antisense copy of the trailer associated with a PPO gene

<400> 32
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caacaagtgg 420
taacttttac tcatctcctc caattatttc tgatttcatg catgtttccc tacattctat 480
tatgaatcgt gttatggtgt ataaacgttg tttcatatct catctcatct attctgattt 540
tgattctctt gcctactgaa tttgacccta ctgtaatcgg tgataaatgt gaatgcttcc 600
tcttcttctt cttcttctca gaaatcaatt tctgttttgt ttttgttcat ctgtagcttg 660
gtagattccc ctttttgtag accacacatc acggatcctt agtctctatt gaatctgctg 720
agattacact ttgatggatg atgctctgtt tttgttttct tgttctgttt tttcctctgt 780
tgaaatcagc tttgttgctt gatttcattg aagttgttat tcaagaataa atcagttaca 840
attatggaat tcaaggttag aaatcttctc tatttttggt ttttgtctgt ttagattctc 900
gaattagcta atcaggtgct gttatagccc ttaattttga gttttttttc ggttgttttg 960
atggaaaagg cctaaaattt gagttttttt acgttggttt gatggaaaag gcctacaatt 1020
ggagttttcc ccgttgtttt gatgaaaaag cccctagttt gagatttttt ttctgtcgat 1080
tcgattctaa aggtttaaaa ttagagtttt tacatttgtt tgatgaaaaa ggccttaaat 1140
ttgagttttt ccggttgatt tgatgaaaaa gccctagaat ttgtgttttt tcgtcggttt 1200
gattctgaag gcctaaaatt tgagtttctc cggctgtttt gatgaaaaag ccctaaattt 1260
gagtttctcc ggctgttttg atgaaaaagc cctaaatttg agtttttcc ccgtgtttta 1320
gattgtttgg ttttaattct cgaatcagct aatcagggag tgtgaaaagc cctaaaattt 1380
gagttttttt cgttgttctg attgttgttt ttatgaattt gcagatggat atccttcttt 1440
gatgctgatc cataattgta actgatttat tcttgaataa caacttcaat gaaatcaagc 1500
aacaaagctg atttcaacag aggaaaaaac agaacaagaa aacaaaaaca gagcatcatc 1560
catcaaagtg taatctcagc agattcaata gagactaagc ttttgatttt aatgtttagc 1620
aaatgtccta tcagttttct ctttttgtcg aacggtaatt tagagttttt tttgctatat 1680
ggattttcgt ttttgatgta tgtgacaacc ctcgggattg ttgatttatt tcaaaactaa 1740
gagtttttgc ttattgttct cgtctatttt ggatatcaat cttagtttta tatcttttct 1800
agttctctac gtgttaaatg ttcaacacac tagcaatttg gctgcagcgt atggattatg 1860
gaactatcaa gtctgtggga tcgataaata tgcttctcag gaatttgaga ttttacagtc 1920
tttatgctca ttgggttgag tataatatag taaaaaaata gtctaga 1967

<210> 33
<211> 1635
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Expression cassette for a sense and antisense copy of the trailer

associated with a PPO gene

<400> 33
ggtaccgaac catgcatctc aatcttaata ctaaaaaatg caacaaaatt ctagtggagg 60
gaccagtacc agtacattag atattatctt ttattactat aataatattt taattaacac 120
gagacatagg aatgtcaagt ggtagcggta ggagggagtt ggttcagttt tttagatact 180
aggagacaga accggagggg cccattgcaa ggcccaagtt gaagtccagc cgtgaatcaa 240
caaagagagg gcccataata ctgtcgatga gcatttccct ataatacagt gtccacagtt 300
gccttccgct aagggatagc cacccgctat tctcttgaca cgtgtcactg aaacctgcta 360
caaataaggc aggcacctcc tcattctcac actcactcac tcacacagct caacaagtgg 420
taacttttac tcatctcctc caattatttc tgatttcatg catgtttccc tacattctat 480
tatgaatcgt gttatggtgt ataaacgttg tttcatatct catctcatct attctgattt 540
tgattctctt gcctactgaa tttgacccta ctgtaatcgg tgataaatgt gaatgcttcc 600
tcttcttctt cttcttctca gaaatcaatt tctgttttgt ttttgttcat ctgtagcttg 660
gtagattccc ctttttgtag accacacatc acggatcctt agtctctatt gaatctgctg 720
agattacact ttgatggatg atgctctgtt tttgttttct tgttctgttt tttcctctgt 780
tgaaatcagc tttgttgctt gatttcattg aagttgttat tcaagaataa atcagttaca 840
attatggaat tcgtggtaac ttttactcat ctcctccaat tatttctgat ttcatgcatg 900
tttccctaca ttctattatg aatcgtgtta tggtgtataa acgttgtttc atatctcatc 960
tcatctattc tgattttgat tctcttgcct actgaatttg accctactgt aatcggtgat 1020
aaatgtgaat gcttcctctt cttcttcttc ttctcagaaa tcaatttctg ttttgttttt 1080
gttcatctgt agcttgatat ccttctttga tgctgatcca taattgtaac tgatttattc 1140
ttgaataaca acttcaatga aatcaagcaa caaagctgat ttcaacagag gaaaaaacag 1200
aacaagaaaa caaaaacaga gcatcatcca tcaaagtgta atctcagcag attcaataga 1260
gactaagctt ttgattttaa tgtttagcaa atgtcctatc agttttctct ttttgtcgaa 1320
cggtaattta gagtttttt tgctatatgg attttcgttt ttgatgtatg tgacaaccct 1380
cgggattgtt gatttatttc aaaactaaga gtttttgctt attgttctcg tctattttgg 1440
atatcaatct tagttttata tcttttctag ttctctacgt gttaaatgtt caacacacta 1500
gcaatttggc tgcagcgtat ggattatgga actatcaagt ctgtgggatc gataaatatg 1560
cttctcagga atttgagatt ttacagtctt tatgctcatt gggttgagta taatatagta 1620
aaaaaatagt ctaga 1635

<210> 34
<211> 240
<212> DNA
<213> Solanum tuberosum

<400> 34
gtccatgatg tcttcagggt ggtagcattg actgatggca tcatagtttt ttttttaaaa 60
gtatttcctc tatgcatatt attagtatcc aataaattta ctggttgttg tacatagaaa 120
aagtgcattt gcatgtatgt gtttctctga aattttcccc agtttttggt gctttgcctt 180
tggagccaag tctctatatg tataagaaaa ctaagaacaa tcacatatat caaatattag 240

<210> 35
<211> 228
<212> DNA
<213> Solanum tuberosum

<400> 35
acgaacttgt gatcgcgttg aaagatttga acgctacata gagcttcttg acgtatctgg 60
caatattgca tcagtcttgg cggaatttca tgtgacaaca aggtttgcaa ttctttccac 120
tattagtagt gcaacgatat acgcagagat gaagtgctga acaaacatat gtaaaatcga 180
tgaatttatg tcgaatgctg ggacgggctt cagcaggttt tgcttagt 228

<210> 36
<211> 2204
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Expression cassette for an omega-mutated virD2 gene

<400> 36
ccgcggtttt ctctccatcg cgtcagaggc cggttttcgt cggcatcgaa gagggccact 60
cgtttaccgt catttgccaa agcagcgcaa aggcccatga gtgcggtggt tttgccagca 120
ccccctttga aagagcaaaa cgtcaaaagt tgcatattct gatcccgcct gtcctgtgaa 180
acggagtgca tttgtatttt tgttcgtata aatgtttttg tgattatcga tgagtaaaag 240
cgttgttaca ctatttttta tttcaaattc gttataatta aattgcaatt gtagcaatta 300
tattcggttt ttcctgtaaa tatactgttg atttcatatc gagtagggct agactttaat 360
ctgtctaccc gggcacattt cgtgctggag tattcagacc ttccgctttt tttggaggaa 420
gctatgtcaa aacacaccag agtcacgtcg agtgagactg ccatcaacca gcatcgatcc 480
ctgaacgttg aagggtttaa ggtcgtgagt gcccgtctgc gatcggccga gtatgaaacc 540
ttttcctatc aagcgcgcct gctgggactt tcggatagta tggcaattcg cgttgcggtg 600
cgtcgcatcg ggggctttct cgaaatagat gcacacaccc gagaaaagat ggaagccata 660
cttcagtcca tcggaatact ctcaagtaat gtatccatgc ttctatctgc ctacgccgaa 720
gaccctcgat cggatctgga ggctgtgcga gatgaacgta ttgcttttgg tgaggctttc 780
gccgccctcg atggcctact ccgctccatt ttgtccgtat cccggcgacg gatcgacggt 840
tgctcgctat tgaaaggtgc cttgtagcac ttgaccacgc acctgacggg agaaaattgg 900
atgcccgatc gcgctcaagt aatcattcgc attgtgccag gaggtggaac caagaccctt 960
cagcagataa tcaatcagtt ggagtacctg tcccgtaagg gaaagctgga actgcagcgt 1020
tcagcccggc atctcgatat tcccgttccg ccggatcaaa tccgtgagct tgcccaaagc 1080
tgggttacgg aggccgggat ttatgacgaa agtcagtcag acgatgatag gcaacaagac 1140
ttaacaacac acattattgt aagcttcccc gcaggtaccg accaaaccgc agcttatgaa 1200
gccagccggg aatgggcagc cgagatgttt gggtcaggat acgggggtgg ccgctataac 1260
tatctgacag cctaccacgt cgaccgcgat catccacatt tacatgtcgt ggtcaatcgt 1320
cgggaacttc tggggcacgg gtggctgaaa atatccaggc gccatcccca gctgaattat 1380
gacggcttac ggaaaaagat ggcagagatt tcacttcgtc acggcatagt cctggatgcg 1440
acttcgcgag cagaaagggg aatagcagag cgaccaatca catatgctga acatcgccgc 1500
cttgagcgga tgcaggctca aaagattcaa ttcgaagata cagattttga tgagacctcg 1560
cctgaggaag atcgtcggga cctcagtcaa tcgttcgatc catttcgatc ggacccatct 1620
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ttccaggagt ccgccggctc cagcatcaaa gccgacgcac ggatccgcgt atcattggag 1740
agcgagcgga gtgcccaacc atccgcgtcc aaaatccctg taattgggca tttcgggatt 1800
gagacttcct atgtcgctga agccagcgtg cgcaaacgaa gcggcatttt cggtacttct 1860
cgcccggtga ctgacgttgc catgcacaca gtcaagcgcc agcagcgatc aaaacgacgt 1920
aatgacgagg aggcaggtcc gagcggagca aaccgtaaag gattgaaggc tgcgcaagtt 1980
gattccgagg caaatgtcgg tgagcaagac actcgcgatg acagcaacaa ggcggctgat 2040
ccggtgtctg cttccatcgg taccgagcaa ccggaagctt ctccaaagcg tccgcgtgac 2100
cgtcacgatg gagaattggg tggacgcaaa cgtgcaagag gtaatcgtcg ctcgagctcg 2160
agcgggggga cctagagaca ggaaggaccg aataatggcc gcgg 2204

<210> 37
<211> 1621
<212> DNA
<213> Solanum tuberosum

<400> 37
atggcttctg tgctggcttc tctgtttcca aaactgggct ctttgggtac ttcagatcat 60
gcttctgttg tatccatcaa cctctttgtg gcactccttt gtgcttgcat catcattggt 120

catctcttgg aggagaaccg ctgggttaat gagtccatta ctgccctcat aattggtttg 180
tgtacaggag tggttatctt gctcgtaagt ggtggaaaga gctcacacct tctggttttc 240
agtgaagatc tctttttcat atatgtactt cctccaatca tatttaatgc agggtttcag 300
gtaaaaaaga agcaattttt cgtaaacttc attactataa tgatgttcgg agccattggt 360
accctggtct catgtgccat tatatcatta ggtgccattc aaactttcaa gaagttggac 420
attgaatttc tagatattgg ggattatctt gcaattggag caatatttgc tgccacagat 480
tccgtctgca cattgcaggt cctacatcag gatgagacac ccctccttta cagtcttgta 540
tttggagaag gagttgtaaa tgatgctaca tcggtggtgc ttttcaatgc tattcaaaac 600
ttcgacctta cgagcatgaa tcccagtata gccctcagtt tccttggcaa cttcttctat 660
ctgttccttg ctagcacttt actgggagca ggaactggtc ttcttagtgc ttacattatc 720
aagaagctat attttggcag gcactccaca gatcgtgagg ttgcccttat gatgctcatg 780
gcttacttat catacttgct ggccgaatta ttctatttga gtgggattct caccgtcttt 840
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tcaatttccg tgagttcaat actgatggga ctaatcttgc ttgggagagc tgcctttgtt 1080
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gcatataata agttcactcg tgggggacac actcaactgc aggacaatgc aataatgatt 1260
accagcacga taaccattgt tctattcagc acaatggtat tcggtttaat gacaaaaccc 1320
cttataagtc tcctgctgcc accacagagg caattgagta cagtgtcatc aggcgcaaat 1380
actccaaagt ctctaacagc cccactccta ggcagtcgag aggactctga agttgattta 1440
aatgttccag atcttcctca cccaccaagt ttgaggatgc tacttaccgc accaagtcat 1500
aaagtgcatc ggtactggcg caagtttgac gatgcattca tgcgccctat gtttggtggt 1560
cggggatttg ctcctcctgc ccctggttct ccaacggaac agggtccatg aggtaccaat 1620
c 1621

<210> 38
<211> 1620
<212> DNA
<213> Solanum tuberosum

<400> 38
atggcttctg tgctggcttc tctgtttcca aaactgggct ctttgggtac ttcagatcat 60
gcttctgttg tatccatcaa cctctttgtg gcactccttt gtgcttgcat catcattggt 120
catctcttgg aggagaaccg ctgggttaat gagtccatta ctgccctcat aattggtttg 180
tgtacaggag tggttatctt gctcgtaagt ggtggaaaga actcacacct tctggttttc 240
agtgaagatc tctttttcat atatgtactt cctccaatca tatttaatgc agggtttcag 300
gtaaaaaaga agcaattttt cgtgaacttc attactataa tgatgttcgg agccattggt 360
accctggtct catgtgccat tatatcatta ggtgcaattc aaactttcaa gaagttggac 420
attgaatttc tagatattgg ggattatctt gcaattggag caatatttgc tgccacagat 480
tccgtctgca cattgcaggt cctacatcag gatgagacac ccctccttta cagtcttgta 540
tttggagaag gagttgtaaa tgatgctaca tcggtggtgc ttttcaatgc tattcaaaac 600
tttgacctta cgagcgtgaa tcccagtata gccctcagtt tccttggcaa cttcttctat 660
ctgttccttg ctagcacttt actgggagca ggaactggtc ttcttagtgc ttacattatc 720
aagaagctgt attttggcag gcactccaca gatcgtgagg ttgcccttat gatgctcatg 780
gcttacttat catacatgct ggctgaacta ttctatttga gtgggattct cactgtattt 840
ttctgtggta ttgtaatgtc tcattacact tggcacaatg tgaccgagag ttcaagagtc 900
actacaaggc acgcttttgc aactttgtca tttcttgcag agactttcct cttcctctat 960
gtcggcatgg atgctttgga tatcgagaag tggaaatttg ttggtgacag gcctggatta 1020
tcaatttccg tgagttcaat actgatggga ttaatcttgc tggggagagc tgcctttgtt 1080
tttccattat cattcttctc caacttaatg aagaaatcct cggagcaaaa aattaccttt 1140
aggcagcaag tgataatatg gtgggcaggt ttgatgagag gcgcagtgtc catggcactg 1200
gcatataata agttcactcg tgggggacac actcaactgc aggacaatgc aataatgatt 1260
accagcacga taaccattgt tctattcagc acaatggtat tcggtttaat gacaaaaccc 1320
cttataagtc tcctgctgcc accacagagg caattgagta cagtgtcatc aggtgcaaat 1380

actccaaagt ctctaacagc cccactccta ggcagtcgag aggactctga agttgattta 1440
aatgttccag atcttcctca cccaccaagt ttgaggatgc tacttaccgc accaagtcat 1500
aaagtgcatc ggtactggcg caagtttgac gatgcattca tgcgccctat gtttggtggt 1560
cggggatttg ctcctcctgc ccctggttct ccaacggaac agggtccatg aggtacaatc 1620

<210> 39
<211> 747
<212> DNA
<213> Solanum tuberosum

<400> 39
atggaaaatt cggtacccag gactgtagaa gaagtattca acgatttcaa aggtcgtaga 60
gctggtttaa tcaaagcact aactacagat gtcgagaagt tttatcaatc gtgtgatcct 120
gaaaaggaga acttgtgtct ctatgggctt cctaatgaaa catgggaagt aaacctccct 180
gtagaggagg tgcctccaga acttccggag ccagcattgg gcataaactt cgcacgtgat 240
ggaatgcaag agaaagactg gttatcactt gttgctgttc acagtgattc atggctgctt 300
tctgttgcat tttactttgg tgcaaggttt gggttcggca agagtgaaag gaagaggctt 360
ttccaaatga taaatgatct cccaacagtg tttgaagttg ttaccggagc tgctaaacag 420
acacgtgatc cccctcacaa caatagcaac aaaagcaaat caagtggaaa gcctcgacag 480
ccagagtccc aactcaaggc agtaaaggtg tctccaccta aaatggagaa cgacagtggg 540
gaggaggaag aagaagaaga ggatgaacaa ggagcaactc tctgtggagc ttgtggtgat 600
aattatgcca ctgatgaatt ctggatttgc tgtgatattt gtgagagatg gttccatggc 660
aaatgtgtga agattacccc agcaaaagct gagcatatca agcagtacaa gtgtcctagt 720
tgcagtagca agagagctag agtttaa 747

<210> 40
<211> 741
<212> DNA
<213> Solanum tuberosum

<400> 40
tgacatctgc caataaagcc aagaataatt ggcattaaca tgaccaaaaa aatggtttgg 60
cagcattaag tcaaataaaa aagctacttt aatataaaat aatattaaaa tgcttaataa 120
ccaacagttt ataagaaggt taatgttaac atggatgagg aatgaccaaa aggggaatta 180
tatattaacc tttaaatcaa tctaattctc tctttttgtt tctagctata tttactcgat 240
agataaactc tcttacttga cgaatttttt gatacaagaa gacatatttc atcatgattt 300
taattcgtcg tgtcaaattt attaaatagt ttaattttaa tcgtaaattt agatatgaaa 360
tttaaaaaaa aataaatata tacatatttg aagaatacat aaaaagtaca tataaatcac 420
aaatatttaa taattcaaga tattaaaaca catagaaaaa taattactta caaagaaatt 480
cttatttgaa tcctctaaat tcgagaagtg caacacaaac tgagacgaag aaaatgaata 540
atatttgata agaaatttat tataattgaa tgaccattta agtaattacg ggtaataaca 600
acacaataag gaactgtagt catttttaat acatggcaag gaatatgaga gtgtgatgag 660
tctataaata gaaggcttca ttagtgtaga ggagtcacaa acaagcaata cacaaataaa 720
attagtagct taaacaagat g 741

<210> 41
<211> 25
<212> DNA
<213> Agrobacterium sp.

<400> 41
tgacaggata tattggcggg taaac 25

<210> 42
<211> 25
<212> DNA
<213> Agrobacterium sp.

<400> 42
tggcaggata tattgtggtg taaac 25

<210> 43
<211> 25
<212> DNA
<213> Agrobacterium sp.

<400> 43
tggcaggata tataccgttg taatt 25

<210> 44
<211> 25
<212> DNA
<213> Agrobacterium sp.

<400> 44
cggcaggata tattcaattg taatt 25

<210> 45
<211> 25
<212> DNA
<213> Agrobacterium sp.

<400> 45
tggtaggata tataccgttg taatt 25

<210> 46
<211> 25
<212> DNA
<213> Agrobacterium sp.

<400> 46
tggcaggata tatggtactg taatt 25

<210> 47
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Consensus sequence

<220>
<221> modified_base

<222> (16)
<223> a, t, c or g

<400> 47
ygryaggata tatwsnvbkg taawy 25

<210> 48
<211> 25
<212> DNA
<213> Rhizobium leguminosarum

<400> 48
cggcaggata tatcctgatg taaat 25

<210> 49
<211> 25
<212> DNA
<213> Thermoanaerobacter tengcongensis

<400> 49
tggcaggagt tattcgaggg taaac 25

<210> 50
<211> 25
<212> DNA
<213> Arabidopsis thaliana

<400> 50
tgacaggata tatcgtgatg tcaac 25

<210> 51
<211> 25
<212> DNA
<213> Arabidopsis thaliana

<400> 51
gggaagtaca tattggcggg taaac 25

<210> 52
<211> 25
<212> DNA
<213> Oryza sativa

<400> 52
ttacaggata tattaatatg tatga 25

<210> 53
<211> 25
<212> DNA
<213> Homo sapiens

<400> 53
taacatgata tattcccttg taaat 25

<210> 54
<211> 25
<212> DNA
<213> Solanum tuberosum

<400> 54
tgacaggata tatggtaatg taaac 25

<210> 55
<211> 25
<212> DNA
<213> Solanum tuberosum

<400> 55
tggcaggata tataccgatg taaac 25

<210> 56
<211> 292
<212> DNA
<213> Saccharomyces cerevisiae

<400> 56
ttcttcgcca gaggtttggt caagtctcca atcaaggttg tcggcttgtc taccttgcca 60
gaaatttacg aaaagatgga aaagggtcaa atcgttggta gatacgttgt tgacacttct 120
aaataagcga atttcttatg atttatgatt tttattatta aataagttat aaaaaaaata 180
agtgtataca aattttaaag tgactcttag gttttaaaac gaaaattctt attcttgagt 240
aactctttcc tgtaggtcag gttgctttct caggtatagc atgaggtcgc tc 292

<210> 57
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<220>
<221> modified_base
<222> (14)
<223> a, t, c or g

<220>
<221> modified_base
<222> (16)
<223> a, t, c or g

<220>
<221> modified_base

<222> (18)
<223> a, t, c or g

<400> 57
tgrcaggata tatnvndntg taaac 25

<210> 58
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 58
ccgcggtgat cacaggcagc aac 23

<210> 59
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 59
aagcttccag ccagccaaca gctccccgac 30

<210> 60
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 60
aagcttggct actagtgcga gatctctaag agaaaagagc gttta 45

<210> 61
<211> 41
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 61
gcatgctcga gataggtgac cacatacaaa tggacgaacg g 41

<210> 62
<211> 34

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 62
actagtgttt acccgccaat atatcctgtc agag 34

<210> 63
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 63
aagctttggc aggatatatt gtggtgtaaa cgaag 35

<210> 64
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 64
cggtgtaagt gaactgcagt tgccatg 27

<210> 65
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 65
catcggcctc actcatgagc agattg 26

<210> 66
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 66
cacgctaagt gccggccgtc cgag 24

<210> 67
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 67
tcctaatcga cggcgcaccg gctg 24

<210> 68
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 68
aaagttgaat tcaaatgaga aatttattc 29

<210> 69
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 69
ttttaagctt tcataataac attctaat 28

<210> 70
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 70
gaaccatgca tctcaatc 18

<210> 71
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 71
gtcaggatcc ctaccaagct acagatgaac 30

<210> 72
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 72
ggatccgagt gtgggtaagt aattaag 27

<210> 73
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 73
gaattctgtg ctctctatgc aaatctagc 29

<210> 74
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 74
ggaacattga agctgtgg 18

<210> 75
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 75
cgaattcatg gcaagcttgt gcaatag 27

<210> 76
<211> 30

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 76
cgaattctta acaatctgca agactgatcg 30

<210> 77
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 77
gagagatctt gataagacac aacc 24

<210> 78
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<220>
<221> misc_feature
<222> (7)
<223> "a" to "c" mutation

<220>
<221> misc_feature
<222> (14)
<223> "a" to "c" mutation

<220>
<221> misc_feature
<222> (17)
<223> "a" to "c" mutation

<400> 78
cattaccata agcccactgt atattagctt gttgc 35

<210> 79
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 79
gtgcttatag aattggtggc 20

<210> 80
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 80
tagttcccgg gagttcagtg 20

<210> 81
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<220>
<221> misc_feature
<222> (17)
<223> "a" to "g" mutation

<220>
<221> misc_feature
<222> (29)
<223> "a" to "t" mutation

<400> 81
ctcccgggaa ctataggaaa cattcctctc ggtcctgtcc acatctggtc 50

<210> 82
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 82
gtgtgatatc tgttcttttc c 21

<210> 83
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 83
gaatgagctt gacaaggcgg ag 22

<210> 84
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 84
ctggcgataa cggaactgtt g 21

<210> 85
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 85
gtccatgatg tcttcagggt ggta 24

<210> 86
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 86
ctaatatttg atatatgtga ttgt 24

<210> 87
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 87
acgaacttgt gatcgcgttg aaag 24

<210> 88
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 88
actaagcaaa acctgctgaa gccc 24

<210> 89
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 89
cccgggatgg cttctgtgct ggct 24

<210> 90
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 90
ggtacctcat ggaccctgtt ccgt 24

<210> 91
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 91
cccgggtatg gaaaattcgg tacccaggac tg 32

<210> 92
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 92
actagttaaa ctctagctct cttgc 25

<210> 93
<211> 17
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<220>
<221> modified_base
<222> (2)
<223> a, t, c or g

<220>
<221> modified_base
<222> (6)
<223> a, t, c or g

<220>
<221> modified_base
<222> (10)..(15)
<223> a, t, c or g

<400> 93
angatntatn nnnnngt 17

<210> 94
<211> 25
<212> DNA
<213> Triticum sp.

<400> 94
tggcaggata tatgagtgtg taaac 25

<210> 95
<211> 26
<212> DNA
<213> Triticum sp.

<400> 95
ttggcaggat atatccctct gtaaac 26

<210> 96
<211> 244
<212> DNA
<213> Solanum tuberosum

<400> 96
gtccatgatg tcttcagggt ggtagcattg actgattgca tcatagtttt ttttttttt 60
ttaagtattt cctctatgca tattattagt atccaataaa tttactggtt gttgtacata 120
gaaaaagtgc atttgcatgt atgtgtttct ctgaaatttt ccccagtttt tggtgctttg 180
ccttttggagc caagtctcta tatgtaataa gaaaactaag aacaatcaca tatatcaaat 240
atta 244

<210> 97
<211> 239
<212> DNA
<213> Solanum tuberosum

<400> 97
acgaacttgt gatcgcgttg aaagatttga acgctacttg gtcatccaca tagagcttct 60
tgacgtatct ggcaatattg catcagtctt ggcggaattt catgtgacaa aaggtttgca 120
attctttcca ctattagtag tgcaacgata tacgcagaga tgaagtgctg aacaaacata 180
tgtaaaatcg atgaatttat gtcgaatgct gggacgggct tcagcaggtt ttgcttagt 239

<210> 98
<211> 416
<212> DNA
<213> Solanum tuberosum

<400> 98
gtttacatta ccatatatcc tgtcagaggt atagaggcat gactggcatg atcactaaat 60
tgatgcccac agaggagact tataacctac aggggcacgt agttctagga cttgaaagtg 120
actgaccgta gtccaactcg gtataaagcc tactcccaac taaatatatg aaatttatag 180
cataactgca gatgagctcg attctagagt aggtaccgag ctcgaattcc ttactcctcc 240
acaaagccgt aactgaagcg acttctattt ttctcaacct tcggacctga cgatcaagaa 300
tctcaatagg tagttcttca taagtgagac tatccttcat agctacactt tctaaaggta 360
cgatagattt tggatcaacc acacacactt cgtttacatc ggtatatatc ctgcca 416

<210> 99
<211> 181
<212> PRT
<213> Solanum tuberosum

<400> 99
Met Arg Asn Leu Phe Pro Ile Leu Met Leu Ile Thr Asn Leu Ala Leu
1 5 10 15

Asn Asn Asp Asn Asn Asn Asn Asn Asn Asn Asn Asn Asn Tyr Asn Leu
20 25 30

Ile His Ala Thr Cys Arg Glu Thr Pro Tyr Tyr Ser Leu Cys Leu Thr
35 40 45

Thr Leu Gln Ser Gly Pro Arg Ser Asn Glu Val Glu Gly Gly Asp Ala
50 55 60

Ile Thr Thr Leu Gly Leu Ile Met Val Asp Ala Val Lys Ser Lys Ser
65 70 75 80

Ile Glu Ile Met Glu Lys Ile Lys Glu Leu Glu Lys Ser Asn Pro Glu
85 90 95

Trp Arg Ala Pro Leu Ser Gln Cys Tyr Val Ala Tyr Asn Ala Val Leu
100 105 110

Arg Ala Asp Val Thr Val Ala Val Glu Ala Leu Lys Lys Gly Ala Pro
115 120 125

```
Lys Phe Ala Glu Asp Gly Met Asp Asp Val Val Ala Glu Ala Gln Thr
    130                 135                 140

Cys Glu Tyr Ser Phe Asn Tyr Tyr Asn Lys Leu Asp Phe Pro Ile Ser
145                 150                 155                 160

Asn Leu Ser Arg Glu Ile Ile Glu Leu Ser Lys Val Ala Lys Ser Ile
                165                 170                 175

Ile Arg Met Leu Leu
            180


<210> 100
<211> 172
<212> PRT
<213> Nicotiana tabacum

<400> 100
Met Arg Asn Leu Phe Pro Ile Phe Met Leu Ile Thr Asn Leu Ala Phe
  1               5                  10                  15

Asn Asp Asn Asn Asn Ser Asn Asn Ile Ile Asn Thr Thr Cys Arg Ala
             20                  25                  30

Thr Thr Asn Tyr Pro Leu Cys Leu Thr Thr Leu His Ser Asp Pro Arg
         35                  40                  45

Thr Ser Glu Ala Glu Gly Ala Asp Leu Thr Thr Leu Gly Leu Val Met
     50                  55                  60

Val Asp Ala Val Lys Leu Lys Ser Ile Glu Ile Met Lys Ser Ile Lys
 65                  70                  75                  80

Lys Leu Glu Lys Ser Asn Pro Glu Leu Arg Leu Pro Leu Ser Gln Cys
                85                  90                  95

Tyr Ile Val Tyr Tyr Ala Val Leu His Ala Asp Val Thr Val Ala Val
            100                 105                 110

Glu Ala Leu Lys Arg Gly Val Pro Lys Phe Ala Glu Asn Gly Met Val
        115                 120                 125

Asp Val Ala Val Glu Ala Glu Thr Cys Glu Phe Ser Phe Lys Tyr Asn
    130                 135                 140

Gly Leu Val Ser Pro Val Ser Asp Met Asn Lys Glu Ile Ile Glu Leu
145                 150                 155                 160

Ser Ser Val Ala Lys Ser Ile Ile Arg Met Leu Leu
                165                 170


<210> 101
<211> 166
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<212> PRT
<213> Nicotiana tabacum

<400> 101
Met Lys Asn Leu Ile Phe Leu Thr Met Phe Leu Thr Ile Leu Leu Gln
1 5 10 15

Thr Asn Ala Asn Asn Leu Val Glu Thr Thr Cys Lys Asn Thr Pro Asn
20 25 30

Tyr Gln Leu Cys Leu Lys Thr Leu Leu Ser Asp Lys Arg Ser Ala Thr
35 40 45

Gly Asp Ile Thr Thr Leu Ala Leu Ile Met Val Asp Ala Ile Lys Ala
50 55 60

Lys Ala Asn Gln Ala Ala Val Thr Ile Ser Lys Leu Arg His Ser Asn
65 70 75 80

Pro Pro Ala Ala Trp Lys Gly Pro Leu Lys Asn Cys Ala Phe Ser Tyr
85 90 95

Lys Val Ile Leu Thr Ala Ser Leu Pro Glu Ala Ile Glu Ala Leu Thr
100 105 110

Lys Gly Asp Pro Lys Phe Ala Glu Asp Gly Met Val Gly Ser Ser Gly
115 120 125

Asp Ala Gln Glu Cys Glu Glu Tyr Phe Lys Gly Ser Lys Ser Pro Phe
130 135 140

Ser Ala Leu Asn Ile Ala Val His Glu Leu Ser Asp Val Gly Arg Ala
145 150 155 160

Ile Val Arg Asn Leu Leu
165

<210> 102
<211> 277
<212> DNA
<213> Solanum tuberosum

<400> 102
ctggcgataa cggaactgtt ggaggatatt ggtttggaag atgaagatac tattgcggtg 60
actctggtgc caaagagagg tggtgaaggt atctccattg aaagtgcgac gatcagtctt 120
gcagattgtt aattagtctc tattgaatct gctgagatta cactttgatg gatgatgctc 180
tgtttttgtt ttcttgttct gttttttcct ctgttgaaat cagctttgtt gcttgatttc 240
attgaagttg ttattcaaga ataaatcagt tacaatt 277

<210> 103
<211> 300
<212> DNA
<213> Solanum tuberosum

<400> 103
ctggcgataa cggaactgtt ggaggatatt ggattggaag atgaagatac tattgcggta 60
actttggttc caaaagtagg tggtgaaggt gtatccattg aaagtgtgga gatcaagctt 120
gaggattgtt aagtcctcat gagttggtgg ctacggtacc aaatttttatg tttaattagt 180
attaatgtgt gtatgtgttt gattatgttt cggttaaaat gtatcagctg gatagctgat 240
tactagcctt gccagttgtt aatgctatgt atgaaataaa taaataaatg gttgtcttct 300

<210> 104
<211> 296
<212> DNA
<213> Solanum tuberosum

<220>
<221> modified_base
<222> (54)
<223> a, t, c or g

<220>
<221> modified_base
<222> (166)
<223> a, t, c or g

<220>
<221> modified_base
<222> (223)
<223> a, t, c or g

<400> 104
ctggcgataa cggaactgtt ggaggataat ggattggaag atgaaggtac tatngcggta 60
actttggttc caaaagttgg tggtgaaggt gtatccattg aaagtgcgga gatcaagctt 120
gaggattgtt aagtcctcat gagttggtgg ctatggtacc aaattntatg tttaattagt 180
attaatgtgt gtgtttgatt atgtttcggt taaaatgtat canctggata gctgattact 240
agccttccca gttgttaatg ctatgtatga aatacataaa taaatggttg tcttcc 296

<210> 105
<211> 13
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 105
ygrcaggata tat 13

<210> 106
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<220>
<221> modified_base
<222> (11)..(15)
<223> a, t, c or g

<400> 106
caggatatat nnnnnkgtaa ac 22

<210> 107
<211> 25
<212> DNA
<213> Arabidopsis thaliana

<400> 107
tggtaggata cattctgatg tagat 25

<210> 108
<211> 25
<212> DNA
<213> Arabidopsis thaliana

<400> 108
tgacaggata tatcgtgatg tcaac 25

<210> 109
<211> 25
<212> DNA
<213> Arabidopsis thaliana

<400> 109
tggtaggata cattctgatg tagta 25

<210> 110
<211> 25
<212> DNA
<213> Oryza sp.

<400> 110
tggcaggata tcttggcatt taaac 25

<210> 111
<211> 25
<212> DNA
<213> Oryza sp.

<400> 111
tgtcaggata tatatcgata tgaac 25

<210> 112
<211> 25

<212> DNA
<213> Oryza sp.

<400> 112
tgtcaggata tatatcgata tgaac 25

<210> 113
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<220>
<221> modified_base
<222> (14)..(18)
<223> a, t, c or g

<400> 113
ygrcaggata tatnnnnnkg taaac 25

<210> 114
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 114
gaccacaccc gtcctgtg 18

<210> 115
<211> 13
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 115
ygrcaggata tat 13

<210> 116
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 116
atggcgacca ca 12

<210> 117
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<220>
<221> modified_base
<222> (11)..(15)
<223> a, t, c or g

<400> 117
caggatatat nnnnnkgtaa ac 22

<210> 118
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 118
gtccaacttg cacaggaaag ac 22

<210> 119
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 119
catggatgaa atactcctga gc 22

<210> 120
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 120
gttcagacaa gaccacagat gtga 24

<210> 121
<211> 74
<212> PRT
<213> Solanum tuberosum

<400> 121
Met Ser Ser Thr Ser Asn Val Gly Gln Asp Cys Leu Ala Glu Val Thr
1 5 10 15

Ile Ser Tyr Gln Trp Val Gly Arg Val Ile Asn Tyr Asn Phe Phe Leu
20 25 30

Leu Ile His Trp Tyr Thr Val Val Glu Ala Ser Thr Gly Ile Thr Phe
35 40 45

Gln Ile Phe Pro Ile Gly Ile Arg Ser Glu Asp Asp Arg Ser Phe Tyr
50 55 60

Glu Lys Ala Asp Arg Phe Ala Trp Val Thr
65 70

<210> 122
<211> 51
<212> PRT
<213> Solanum tuberosum

<400> 122
Met Ser Ser Glu Ser Thr Phe Ser Lys Thr Pro Asn Gly Arg Ala Thr
1 5 10 15

Asp Val Gly Ile Pro Thr Glu Glu Gly Thr Phe Pro Phe Arg Tyr Ala
20 25 30

Ile Leu Arg Asp Leu Ala Pro Thr Ile Ser Leu Val Asn Ser Ser Ala
35 40 45

Asp Ile Ala
50

<210> 123
<211> 76
<212> PRT
<213> Solanum tuberosum

<400> 123
Met Ser Glu Gly Val Gly Phe Lys Ser Lys Ile Leu Pro Ser Phe Ala
1 5 10 15

Trp Arg Ser Ala Asn Ile Leu Gly Ser Lys His Val Ala Lys Gln Thr
20 25 30

Phe Pro Phe Leu Ala Arg Thr Glu Thr Cys Glu Arg Thr Ser Gly Met
35 40 45

```
Ser Gly Val Ile Arg Ala Thr Ala Pro Ser Gly Ile Ser Ser Ser Pro
     50                  55                  60

Leu Thr Asp Phe Ala Thr Lys Ile Val Gly Phe Ser
 65                  70                  75


<210> 124
<211> 62
<212> PRT
<213> Solanum tuberosum

<400> 124
Val Cys Ser Pro Ala Leu Lys Ala Asp Lys Ser Lys Ser Ala Asp Gly
  1               5                  10                  15

Thr Cys Val Asp His Ser Arg Arg Leu Ile Val Val Leu Val Leu Tyr
            20                  25                  30

Pro Gly Met Gly Thr Ser Tyr Ala Thr Ala Phe Ile Ser Ser Pro Pro
         35                  40                  45

Ile Gln Tyr Leu Phe Pro Ser Asp Pro Val Glu Thr Phe Pro
     50                  55                  60


<210> 125
<211> 50
<212> PRT
<213> Solanum tuberosum

<400> 125
Met Leu Gly Ser Leu Val Leu Pro Lys Ser Pro Glu Asn Arg Lys Gln
  1               5                  10                  15

Ala Val Pro Asn Pro His Phe Gln Glu Gln His Leu Val Pro Glu Lys
            20                  25                  30

Pro His Phe Leu Asp Cys Gly Gln Gly Phe Ser Lys Leu Pro Gln Met
         35                  40                  45

His Gln
     50


<210> 126
<211> 65
<212> PRT
<213> Solanum tuberosum

<400> 126
Met Val Asn Phe Leu Thr Gln Gly Ile Val Asp Met Glu Thr Ala Phe
  1               5                  10                  15

Gly Ser Pro Lys Met Gly Gly Phe Gly Lys Glu Gln Phe Gly Ala Cys
            20                  25                  30
```

Val Ser Arg Ser Glu Met Asp Glu Ser Gly Ile Gly Ala Val Met Val
35 40 45

Glu Gln Val Cys Ser Ile Cys Ser Arg His Phe Val Leu Ser Met Gln
50 55 60

Ile
65

<210> 127
<211> 77
<212> PRT
<213> Solanum tuberosum

<400> 127
Met Leu Glu Gly Ser Met Trp Pro Trp Asn Gln Glu Ser Met Lys Arg
1 5 10 15

Ala Phe Leu Asn His His Phe Leu Met Leu His Leu Phe Pro Ala Gln
20 25 30

Arg Pro Pro Gln Ala Ala Asp Pro Val Cys Leu Lys His Gln His Met
35 40 45

His Cys Gly Cys Leu Ser Phe Gln Leu His Leu Ser Lys Leu Ala Pro
50 55 60

Gly Asp Thr Pro Leu Ile Ser Ser Met Phe Ala Leu Asp
65 70 75

<210> 128
<211> 49
<212> PRT
<213> Solanum tuberosum

<400> 128
Met Lys Leu Cys Ser Ser Ile Ile Leu Ser Ile Ile Lys Gln Lys Gln
1 5 10 15

Val Glu Ile Leu Arg Ala Cys Phe Gly Phe Pro Glu Thr Lys Thr Ile
20 25 30

Ser Val Phe Ser Ser Val Ser Trp Asn Trp His Ile Ile Cys Lys Ser
35 40 45

Leu

<210> 129
<211> 64
<212> PRT
<213> Solanum tuberosum

<400> 129
Met Thr Lys Lys Pro Asp Arg Lys Asp Asn Ile Met Pro Tyr Asn Phe
1 5 10 15

Pro Gly Thr Lys Phe Leu Gln Pro Ile Phe Arg Asn Phe Phe Leu Pro
20 25 30

Ser Leu Cys Asp Lys Leu Leu Lys Lys Ser Ile Ser Val Pro Gln Ala
35 40 45

Ile Thr Pro Cys Trp Lys Val Gln Cys Gly His Gly Ile Lys Lys Ala
50 55 60

<210> 130
<211> 115
<212> PRT
<213> Solanum tuberosum

<400> 130
Thr Ile Leu Lys Leu Asp Leu His Thr Phe Asn Gly His Phe Phe Thr
1 5 10 15

Ala Ser Phe Trp Asn Gln Ser His Arg Asn Ser Ile Phe Ile Phe Gln
20 25 30

Ser Asn Ile Leu Gln Gln Phe Ser Tyr Arg Gln Leu Glu Ser Asn Thr
35 40 45

Gly Asn Met Ile Ser Ile Thr Ser Met Asn Met Arg Gln Ala Ser Ile
50 55 60

Thr Pro Cys Lys Leu Arg Leu Ile Lys Leu Ile Cys Ile His Ser Leu
65 70 75 80

Val His Val Gln Lys His Ile Glu Pro Tyr Ile Val Pro Ile Ile Ile
85 90 95

Arg Tyr Phe Ile Glu Cys Gln Tyr Leu Leu Leu Leu Ile Phe Leu Leu
100 105 110

Cys Cys Pro
115

<210> 131
<211> 122
<212> PRT
<213> Solanum tuberosum

<400> 131
Met Lys Gly Lys Glu Lys Pro Arg Glu Met Asn Leu Gln Phe Phe Thr
1 5 10 15

Thr Asn Phe Val Ser Thr Val Ala Ile Ser Thr Met Asn Ile Ser Leu
20 25 30

```
Leu Phe Lys Ala Lys Arg Val Lys Gly Val Phe Ile Lys Phe Pro His
         35                  40                  45

Ser Thr Arg Ser Gln Leu Ile Leu Gly Tyr Val Leu Leu Ile Arg Arg
     50                  55                  60

Met Ser Arg Gly Ala Asp Ala Glu Phe Ser His Arg Arg Glu Leu Val
 65                  70                  75                  80

Val Arg Asn Thr Ile Asp Leu Ile Gly Tyr Arg Arg Ala Thr Thr Val
                 85                  90                  95

Tyr Tyr Ile Asn Thr Phe Phe Tyr Met Gly Ser Thr Thr Arg Leu Glu
            100                 105                 110

Ile Arg Arg Trp Tyr Arg Cys Ser Ser Arg
        115                 120


<210> 132
<211> 104
<212> PRT
<213> Solanum tuberosum

<400> 132
Met Glu Trp Ala Leu Ala Arg Asn Arg Ile Pro Phe Phe Tyr Cys Pro
  1               5                  10                  15

Asn Ser Leu Arg Thr Ser His Gly Lys Gly Tyr Asp Phe His Arg Arg
             20                  25                  30

Lys Arg Ile Gln Ser Ser Thr Asn Leu Tyr Leu Leu Asn Pro Phe Phe
         35                  40                  45

Ser Arg Gln Leu Ile Ser Ile His Ser Thr Ser Cys Pro His Trp His
     50                  55                  60

Gly Gly Ser Lys Lys Ser Asp Leu Asn Arg Val Ser Arg Asn Tyr Pro
 65                  70                  75                  80

Cys Leu His Arg Phe Phe Asp Glu Val Cys His Arg Ser Arg Cys Glu
                 85                  90                  95

Pro Glu Tyr Glu Gly Cys Phe Gln
            100


<210> 133
<211> 92
<212> PRT
<213> Solanum tuberosum

<400> 133
Met Asn Asn Ile Thr His Ser Pro Ile Leu Ile Pro Phe Leu Glu Gln
  1               5                  10                  15
```

```
Leu Asn Pro Phe Ile Ser Asn Cys His Met Gln Pro Ile Val Lys Ala
            20                  25                  30

Asn Thr Pro Ile Leu Asn Gly Asn Thr Lys Cys Arg His Ser Ala Asn
        35                  40                  45

Ile Phe Thr Asn Gly Asn Cys Ile Trp Glu Lys Pro Met Asn Lys Ile
    50                  55                  60

Val Asp Gln His Gln Ile His Asn Ser Ile His Ile Ser Cys Glu Ser
65                  70                  75                  80

Lys Val Phe Leu Val Val Pro Ser Glu Ser His Arg
                85                  90
```

<210> 134
<211> 57
<212> PRT
<213> Solanum tuberosum

<400> 134

```
Met Lys Phe Arg Tyr Pro Ser Pro Pro Asn Pro Ile Val Thr Ser Leu
  1               5                  10                  15

Ile Ile Leu Cys Asn Ala Ile Pro Arg Ser Ile Asn Asp Val Asp Gly
            20                  25                  30

Leu Ser Arg Ala Ile Lys Ser Tyr Ile Ser Leu Ser Ile Ser Gln Asn
        35                  40                  45

Ala Ile Val Leu Ser Pro Thr Arg Ala
    50                  55
```

<210> 135
<211> 70
<212> PRT
<213> Solanum tuberosum

<400> 135

```
Met Val Asn Ile Met Thr Ser Ser Ser Met Ala Thr Lys Phe Pro Ser
  1               5                  10                  15

Ile Thr Val Gln Cys Asn Ser Val Leu Pro Trp Gln Val Thr Ser Asn
            20                  25                  30

Phe Ile Pro Phe Val Cys Val Leu Trp Val Glu Val Glu Tyr Lys Tyr
        35                  40                  45

Gln Val Thr Thr Phe Lys His Asn Asn Leu Ile Ile Ile Ile His Ala
    50                  55                  60

Ala Tyr Tyr Leu Phe Ser
65                  70
```

<210> 136
<211> 51
<212> PRT
<213> Solanum tuberosum

<400> 136
Met Ala Lys Leu Val Thr His Glu Ile Glu Val Pro Leu Ser Ser Gln
1 5 10 15

Gly His Cys Glu Lys Met Asp His Leu Val Lys Arg Asn Ser Ser Ile
20 25 30

Asn Asn Arg Arg Ser Ile Cys Gln Ala Arg His Ala Arg Ile His Leu
35 40 45

Phe Val His
50

<210> 137
<211> 72
<212> PRT
<213> Solanum tuberosum

<400> 137
Met Phe Glu Thr Lys Leu Asn Ser Gly Val Val Trp Asn Asp Trp Leu
1 5 10 15

Thr Val Asn Ile Arg Asn Ser Asn Thr Pro Asn Thr Lys Leu Val Leu
20 25 30

Leu His His Val Val Arg Thr Val Pro Ser Ile Glu Ile Ala Asn Asn
35 40 45

Phe Val Phe Leu Ser Ser Arg Ser Pro Phe Thr Ile Asp Tyr Ala Thr
50 55 60

Ile Phe Pro Val Glu Ser Lys Phe
65 70

<210> 138
<211> 66
<212> PRT
<213> Solanum tuberosum

<400> 138
Met Leu Tyr Thr Ser Leu Tyr Ile Ser Tyr Leu Ser Asn Ser Met Leu
1 5 10 15

Leu Pro Ser Trp Thr Asn Leu His His Ser Tyr Ser Leu Asn Asn Leu
20 25 30

Ser Thr Tyr Leu Gly Leu Pro Leu Pro Gly Gly Asn Gln Asn Gln Phe
35 40 45

Leu Pro Gln Lys Gln Ala Gly Gln Gly Pro Ala Tyr Gln Lys His Leu
50 55 60

Arg Gln
65

<210> 139
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<220>
<221> modified_base
<222> (8)
<223> a, t, c or g

<220>
<221> modified_base
<222> (10)
<223> a, t, c or g

<220>
<221> modified_base
<222> (12)
<223> a, t, c or g

<400> 139
gtttacanhn bnatatatcc tgyca 25